

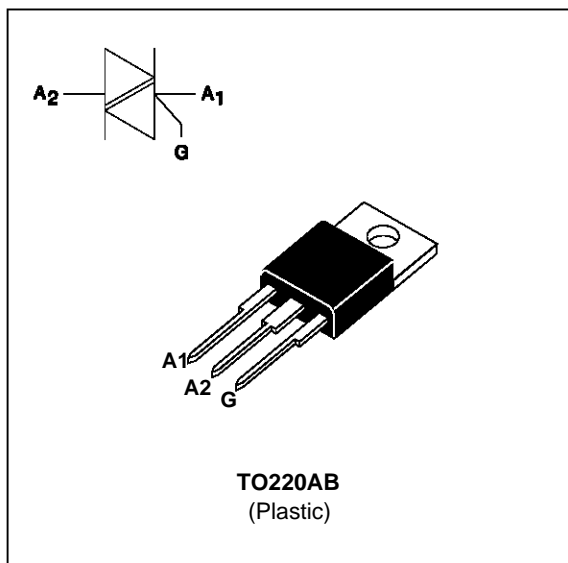
## SNUBBERLESS TRIACS

### FEATURES

- HIGH COMMUTATION :  $(di/dt)_c > 9A/ms$  without snubber
- HIGH SURGE CURRENT :  $I_{TSM} = 100A$
- $V_{DRM}$  UP TO 800V
- BTA Family :  
INSULATING VOLTAGE = 2500V(RMS)  
(UL RECOGNIZED : E81734)

### DESCRIPTION

The BTA/BTB10 BW/CW triac family are high performance glass passivated chips technology. The SNUBBERLESS™ concept offer suppression of RC network and it is suitable for application such as phase control and static switching on inductive or resistive load.



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
I <sub>T(RMS)</sub>	RMS on-state current (360° conduction angle)	BTA	T <sub>c</sub> = 90 °C	10	A
		BTB	T <sub>c</sub> = 100 °C		
I <sub>TSM</sub>	Non repetitive surge peak on-state current ( T <sub>j</sub> initial = 25°C )		tp = 8.3 ms	105	A
			tp = 10 ms	100	
I <sup>2</sup> <sub>t</sub>	I <sup>2</sup> <sub>t</sub> value		tp = 10 ms	50	A <sup>2</sup> s
di/dt	Critical rate of rise of on-state current Gate supply : I <sub>G</sub> = 500mA   di <sub>G</sub> /dt = 1A/μs		Repetitive F = 50 Hz	20	A/μs
			Non Repetitive	100	
T <sub>stg</sub> T <sub>j</sub>	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
T <sub>l</sub>	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			260	°C

Symbol	Parameter	BTA / BTB10-... BW/CW				Unit
		400	600	700	800	
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltage $T_j = 125\text{ }^{\circ}\text{C}$	400	600	700	800	V

**THERMAL RESISTANCES**

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	3.3	°C/W
		BTB	2.7	
Rth (j-c) AC	Junction to case for 360° conduction angle ( F= 50 Hz)	BTA	2.5	°C/W
		BTB	2.0	

**GATE CHARACTERISTICS** (maximum values)

$P_G$  (AV) = 1W     $P_{GM}$  = 10W (tp = 20 μs)     $I_{GM}$  = 4A (tp = 20 μs)     $V_{GM}$  = 16V (tp = 20 μs).

**ELECTRICAL CHARACTERISTICS**

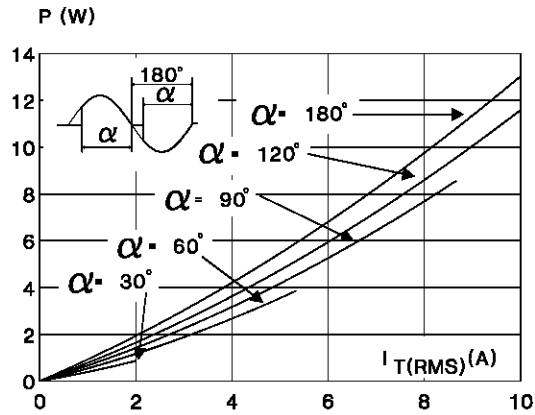
Symbol	Test Conditions		Quadrant		Suffix		Unit
					BW	CW	
I <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>j</sub> =25°C	I-II-III	MIN	2	1	mA
				MAX	50	35	
V <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>j</sub> =25°C	I-II-III	MAX	1.5		V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3kΩ	T <sub>j</sub> =125°C	I-II-III	MIN	0.2		V
tgt	V <sub>D</sub> =V <sub>DRM</sub> I <sub>G</sub> = 500mA dI <sub>G</sub> /dt = 3A/μs	T <sub>j</sub> =25°C	I-II-III	TYP	2		μs
I <sub>L</sub>	I <sub>G</sub> =1.2 I <sub>GT</sub>	T <sub>j</sub> =25°C	I-III	TYP	40	-	mA
			II	TYP	80	-	
			I-III	MAX	-	50	
			II	MAX	-	80	
I <sub>H</sub> *	I <sub>T</sub> = 500mA gate open	T <sub>j</sub> =25°C		MAX	50	35	mA
V <sub>TM</sub> *	I <sub>TM</sub> = 14A tp= 380μs	T <sub>j</sub> =25°C		MAX	1.65		V
I <sub>DRM</sub> I <sub>RRM</sub>	V <sub>DRM</sub> Rated V <sub>RRM</sub> Rated	T <sub>j</sub> =25°C		MAX	0.01		mA
		T <sub>j</sub> =125°C		MAX	2		
dV/dt *	Linear slope up to V <sub>D</sub> =67%V <sub>DRM</sub> gate open	T <sub>j</sub> =125°C		MIN	500	250	V/μs
				TYP	750	500	
(dI/dt) <sub>c</sub> *	Without snubber	T <sub>j</sub> =125°C		MIN	9	5.5	A/ms
				TYP	18	11	

\* For either polarity of electrode A2 voltage with reference to electrode A1.

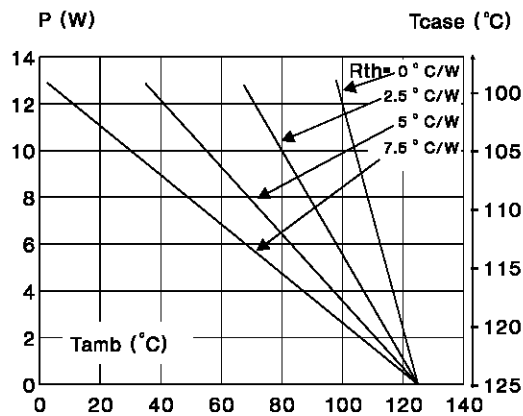
# ORDERING INFORMATION

Package	I <sub>T</sub> (RMS)	V <sub>DRM</sub> / V <sub>RRM</sub>	Sensitivity Specification	
	A	V	BW	CW
BTA (Insulated)	10	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X
		800	X	X

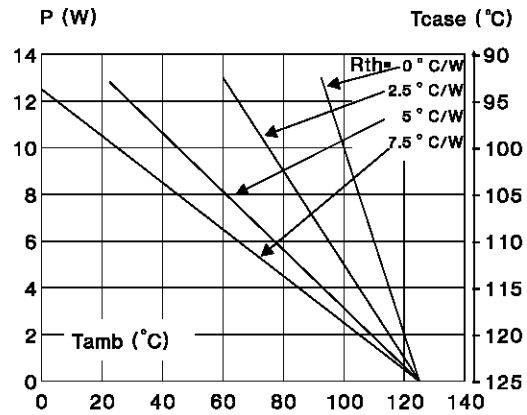
**Fig.1** : Maximum RMS power dissipation versus RMS on-state current ( $F=50\text{Hz}$ ).  
(Curves are cut off by  $(di/dt)_c$  limitation)



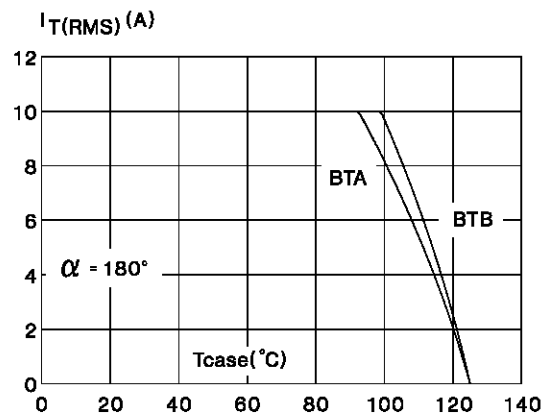
**Fig.3** : Correlation between maximum RMS power dissipation and maximum allowable temperatures ( $T_{\text{amb}}$  and  $T_{\text{case}}$ ) for different thermal resistances heatsink + contact (BTB).



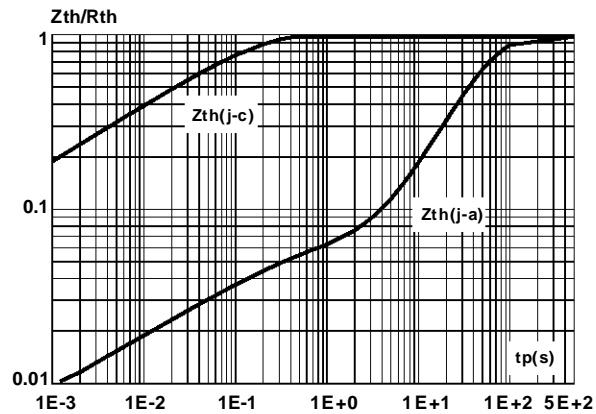
**Fig.2** : Correlation between maximum RMS power dissipation and maximum allowable temperatures ( $T_{\text{amb}}$  and  $T_{\text{case}}$ ) for different thermal resistances heatsink + contact (BTA).



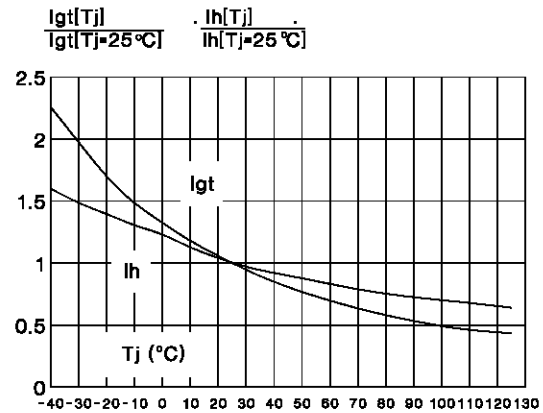
**Fig.4** : RMS on-state current versus case temperature.



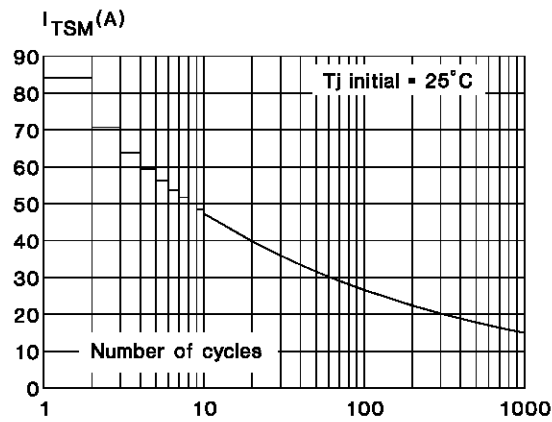
**Fig.5** : Relative variation of thermal impedance versus pulse duration.



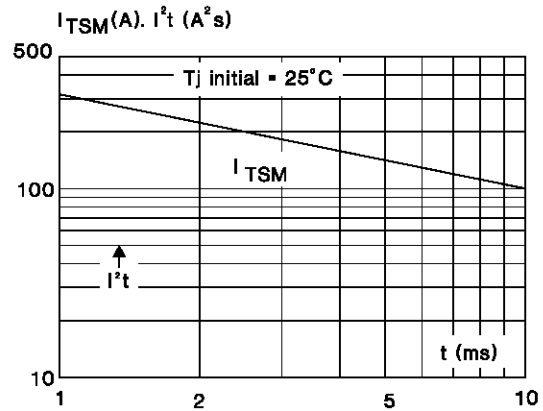
**Fig.6** : Relative variation of gate trigger current and holding current versus junction temperature.



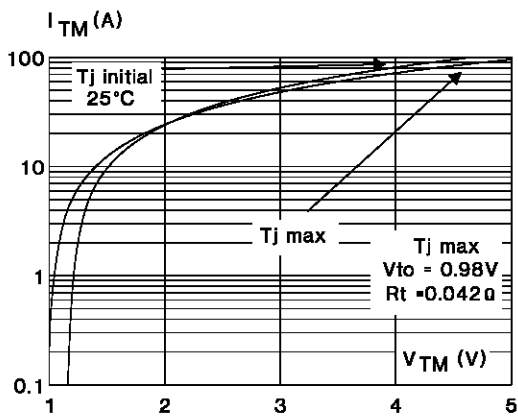
**Fig.7** : Non Repetitive surge peak on-state current versus number of cycles.



**Fig.8** : Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10\text{ms}$ , and corresponding value of  $I^2t$ .

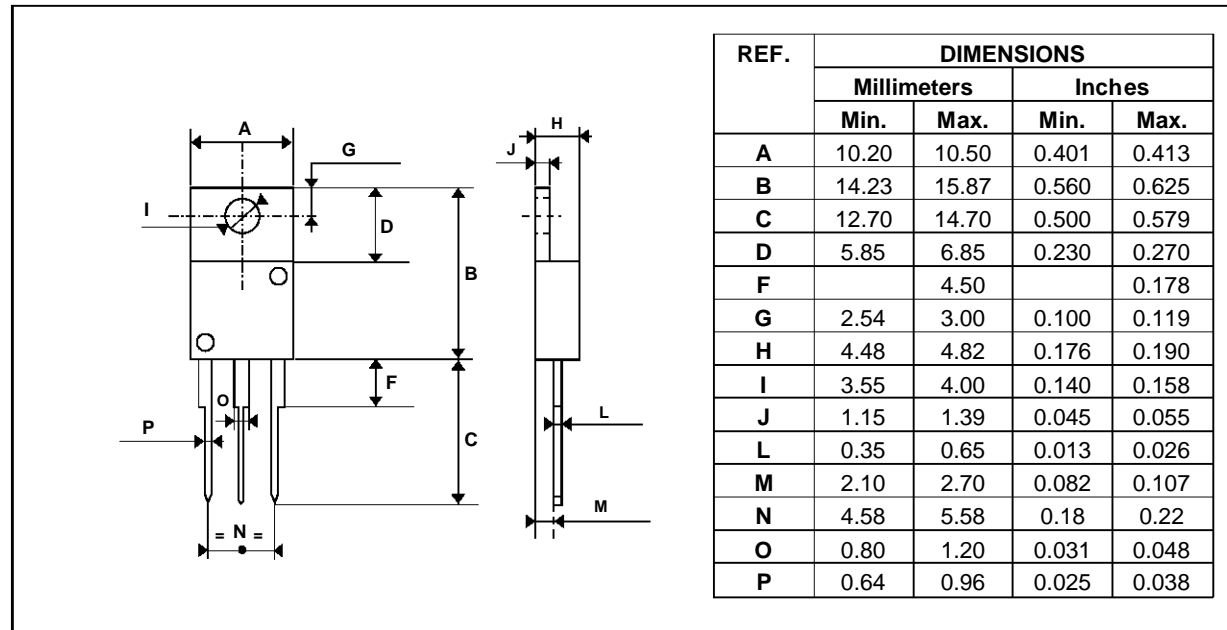


**Fig.9** : On-state characteristics (maximum values).



**PACKAGE MECHANICAL DATA**

TO220AB Plastic



Cooling method : C

Marking : type number

Weight : 2.3 g

Recommended torque value : 0.8 m.N.

Maximum torque value : 1 m.N.

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